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NOTES ON NATURE STUDY

WILBUR S. JACKMAN.

I. THE MOTIVE.

It is the persistent aim to keep the pupils in constant touch with the many and apparently diverse aspects of nature as they are gradually and successively unfolded by the seasons. If the children are afforded the proper opportunity, and have a reasonable support through the encouragement of the teacher and parents, such observations will easily and naturally go forward.

The ancient traditions which gave form to the methods of the class-room and recitation, and which in large measure now control them, still furnish great hindrances to the correct treatment of work of this character in the study of nature. The idea that the pupils can be kept together only when doing the same work, thus ignoring variety of interests, is responsible for a good deal of difficulty. It is only in the most general way that any attempt should be made to keep the children together in any of their studies. The different modes of expression are still usually taught as ends in themselves, and the pupils fail to get their full benefit as actual aids in their real thinking. But the tremendous overestimate that is almost everywhere placed upon the relative value of the so-called "humanities" in the development of true character is the greatest obstacle of all. This will be the last to be removed, for it has its source in the deep-rooted prejudice against that frank and fearless study and interpretation of nature that modern science enjoins. It is a fact, too striking to be simply a coincidence, that as man gives more and more time and attention to the intelligent study of nature the humanities themselves become more and more humane. It is only as this is duly appreciated that it is possible to have nature presented to the children from the point of view of character-building. Teachers are just beginning to feel that nature study is a fine thing merely an a means to develop in their children alert and

inquiring minds ; that it is worth while to cater to the children's tastes and desires to the extent of allowing some incidental work in the subject; that the practical and utilitarian demands of present life are a sufficient excuse for devoting some time to it; and so, for these reasons, from these points of view, they themselves study nature a little, and in an irresponsible sort of a way they try to teach it. But it will be only when teachers find out—as find out they must—that the study of nature is just as fundamentally necessary and as efficacious in the development of genuine morality as it is in the development of keen eyesight and hearing—it is only then that they will refuse to teach school without it as they now would refuse to teach leaving the so-called humanities out.

It is a common thing for people to scold at science on account of its manifest indifference toward the feelings of men. Because of this it has never yet been admitted to the sacred circle of the humanities. Hence the conclusion, also, that it can have nothing to do with morality, since that term expresses a relation between man and man—not between man and trees or between some trees and other trees. It is true that science steadfastly refuses to take part in the petty quarrels of humanity for the purpose of arbitrating or otherwise settling differences that rest upon dogmas of any kind. But the participants in this strife in time will see that their only hope for harmony lies in an appeal to nature; that it is only as they really find out for themselves nature's own way of doing things that they can safely determine what their moral relations toward each other actually are.

It is inconceivable that there can be a code of ethics among the trees or the brutes. With them, the race is to the swift and the battle to the strong. To imitate them would be as though we set up human thieves and cutthroats for our models. But true moral conduct is not a matter of imitation; its springs are found rather in the apprehension of those mutual relations which form an established order in nature. The theory of evolution has culminated in the greatest discovery of all time, that the spiritual relations existing among men represent as truly that established

order of nature as do the physical relations existing among trees. The leaf stretches out to the sunshine and the strong arm reaches out to the weak for precisely the same reason—nature ordains it for both as a fundamental and absolute condition of life. The behavior of both is in strict accordance with an established order of nature so rigid and inflexible that, for want of a clearer way of expressing it, we say they do it in obedience to a natural law. To disobey this is to incur the penalty in the one case of physical, and in the other of spiritual, death. In the early and primitive code of morals, this law appears to be an arbitrary fiat imposed from without. It therefore seems to be possible to successfully resist it, or by sacrifice to placate it, or by entreaty to evade it. In the new code now slowly forming in the light of the facts of evolution it appears to be merely the description of the inner constitution of things without which they cannot even be imagined to exist. Hence the abysmal chasm that separates the old morality from the new.

Here, then, is the central and final thought that must be uppermost in the mind of the student of nature and his teacher: I wish to know this tree for one reason—and only one—that I may live justly and walk uprightly. There is no other reason, in the last analysis, that is worth considering. I must know its wood that I may build shelter, and its fruit that I may have food, it is true. But these are secondary. If nature did nothing but teach us how to protect our bodies, then its study would forever keep us on the plane of the wild fox and the sheep, which grow hair and wool. If nature revealed to us nothing more than the world as a storehouse of food, then its study would doom us to consort eternally with the birds. If nature study is not a means—the means—to righteousness, directly, then the less of it we have in the schools the better, for its knowledge will be as dried grass in a breath of flame.

II. NATURE STUDY THROUGH COMMITTEES.

In organizing the work of an entire grade so that the various interests and abilities of the pupils may be considered, it is useful to divide the room into about five committees. By this plan

it is possible for each pupil to have a fair range of choice as to the domain of his observations, and the entire field may be fairly well covered by the grade as a whole. If a few minutes each day are set apart for the report of a committee, the subject is kept constantly before the children, different aspects of nature are being presented, and yet no one pupil is being unduly pressed for results. With practically a week in which to prepare his report, he may proceed with the deliberation that is necessary to good work and careful observation. The following groups of topics are suggested as indications as to what the work of the committees may include.

1. *The birds*.—Time of arrival; food; nesting habits. Bird-boxes may be made in various regular or extemporized forms.
2. *Earthworms*.—Date; nature of soil where found; habits; food; amount of earth in castings per square foot; etc.
3. *Insects*.—Earliest forms; winter history; habits; enemies; harmless or destructive; relations to plants.
4. *Plants*.—(a) Trees: order of opening of the buds; devices for protecting the young leaves from cold and wet. (b) Plants that spring from roots or underground stems that survive the winter; order of appearance; of blooming; of ripening seeds. (c) Seedlings; earliest to appear; favoring location and conditions; flowering and fruiting.
5. *Pond life*.—Earliest signs of life. Frogs, snails, snakes, water beetles, dragon-flies, algæ, lilies, rushes, etc.
6. *Climatic conditions*.—Temperature of air; of the soil; moisture in the soil; rainfall; sunshine; clouds and wind. These observations should form a continuous record in graphic form by means of curves as suggested in previous numbers of this magazine.
7. *Painting*.—The pupils of each committee should paint a landscape once a week to accompany their reports. A daily and continuous history of the season will thus be written in color. By means of paintings and drawings the details of plants and animals studied may be shown. Other forms of expression and mathematics will be needed, if the observations are to have much of permanent value.

Much of the work suggested for these committees will be done in connection with the preparation and care of the garden, which will be managed in general on the plan that was followed last year.

In this connection it is hoped that the school and the home may unite to enlist the interests and the services of the children

in an attempt to beautify their home surroundings. With this in view the following circular letter, which explains itself, is being addressed to the patrons and friends of the school. It is proposed to see that each child who desires to do work of this sort is provided with all the necessary help. A traveler in approaching a school, if it is a good one, should be able to learn first of its presence through its influence upon the homes of the district. In no easier or more beautiful way can this influence be shown than through the cultivation of flowers.

III. HOME GARDENS.

To the Parents of the University Elementary School:

It is intended this spring to encourage the children of the vicinity to plant and care for a small plot of ground, where practicable within their own dooryards. It is believed that the school should be felt as an influence for good through what the children do, at least to the limits of the district, and that they should become early partakers in that civic pride which seeks to make their neighborhood more healthful and beautiful. As an aid in realizing this idea you are earnestly requested to co-operate with the school in this effort by answering the following questions, to the end that the school may render the children all the assistance that may be necessary or possible:

1. Have you a small space in your dooryard that you are willing your children should use in planting flowers or vegetables or both? _____
2. How large? Length, _____ feet. Width, _____ feet. (Let the children measure it and answer all other questions in this list that can be referred to them.)
3. Sunshine: _____ hours in forenoon; _____ hours in afternoon.
4. Soil: _____ sand, _____ clay, _____ loam, _____ depth _____
5. Can it be easily watered? _____
6. Will you provide the children with a hoe and rake? _____
7. Do you wish suggestions as to the kinds of seeds to be planted? _____
8. Will you furnish the children with the necessary seeds, roots, or plants? _____ (The expense will be insignificant.)
9. Have you any locations suitable for vines? _____ Fence? _____ Wall? _____ Side of house? _____ Porch? _____
10. What other flower and vegetable beds will you have? _____
11. If yard space is not available, have you windows, or other places suitable for boxes? _____ (Boxes may be made in the manual-training room at the school. Let the children get the proper dimensions.)

12. Have you neighbors whose children are not in our school that would be interested in work of this kind?

Name _____

Address _____

(Signed by parent) _____

Address _____

Number of children _____

NOTE: If this paper is properly filled out and promptly returned, plans will be made at once for helping the children, who will be given opportunity from time to time to report to the whole school upon their work.